

AU/ACSC/022/1999-04

AIR COMMAND AND STAFF COLLEGE

AIR UNIVERSITY

BIOLOGICAL WARFARE AND MEDICAL READINESS
TRAINING

A CONSTRUCT FROM THE LITERATURE

by

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A Research Report Submitted to the Faculty

In Partial Fulfillment of the Graduation Requirements

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April 1999

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Preface

The psychological impact of biological weapons became apparent during Desert Storm. When mobilized to Nocton Hall, England, we established an 800-bed hospital in a “turn key” facility. The troops had little collective combat experience and no training in biological warfare, other than its mention with chemical and nuclear weapons. Rumors that Saddam Hussein was prepared to use anthrax as a weapon circulated among the frightened medical troops. As a young nurse I questioned the medical leaders about measures we had taken to protect caregivers and patients against anthrax. Although the infectious disease physician reassured me there was nothing to worry about, he based his answer on naturally occurring Anthrax. The physician did not realize the anthrax strain manufactured for weapons was more virulent and more easily transmitted. The Medical Group Commanders did not brief their lower echelon leaders on a contingency plan to deal with deliberate Anthrax contamination among our patients and staff.

We feared Saddam had biological weapons ready to deploy. We knew he had used chemical weapons and we felt ill prepared to deal with biological warfare. These realities increased our fear and caused us to distrust our leaders. Biological weapons did not have to be deployed to be a threat. Knowledge is power. This paper will demonstrate how U.S. troops can exploit the power of knowledge to manage biological warfare.

Special thanks to Major Marlin Moore for his support and guidance on this project, and to Lt Colonel (Dr.) Byron Hepburn for assistance with resources and references.

Abstract

The survivability and function of military medical personnel is imperative to maintain good morale and fighting capability of combat troops. The fear of physical damage promotes a psychological response to the threat of biological war. This threat has the capacity to terrorize deployed medical personnel, reducing their effectiveness. Ignorance exacerbates this terror. The threat of biological warfare is high because it is a versatile weapon. Biological Warfare is highly threatening due to its ease of development and delivery. Biological weapons can be used with stealth and pose a great psychological and diplomatic threat. Biological warfare can be used as a precision weapon or for total destruction. The threat of deadly agents negatively affects performance. To effectively counteract the threat of biological weapons military medical personnel must receive focused training. On-going readiness training specifically geared toward the biological threat needs to be an integral part of medical readiness training. Knowledge is a powerful counteragent to the biological warfare threat. Training needs to encompass the affective, cognitive and psychomotor domains of learning. The ability of medics to function at a high pace without confusion under the threat of biological warfare positively impacts the performance of combat troops. Calm and competent caregivers will diminish the panic value of biological weapons and enhance combat effectiveness.

Chapter 1

Introduction

This scenario of a nuclear, biological, or chemical weapon in the hands of a terrorist cell or rogue nation is not only plausible; it's really quite real.

Defense Secretary, William Cohen

Are military medical personnel adequately trained to combat the impact of biological warfare? This project will demonstrate they are not. A review of the literature will expose the degree of danger. An overview of today's world will explain the impact of contextual elements on the operational art of health care in a hostile environment and ultimately on combat performance. Finally, discussion about how best to counteract this danger through training within the confines of the military medical career fields will be presented.

Hypothesis

The thesis of this study is: "Current military training of medical personnel in biological warfare is deficient because it fails to address changing contextual elements through training exercises." Biological warfare is the deployment of microorganisms to cause illness or death in the enemy. Contextual elements include political, international, economic, leadership, sociocultural and environmental considerations.¹ These elements impact campaign planning because they alter outcome of operational arts applications.

Training which is guided by contextual elements ensures the topic of biological warfare is covered in a practical and useful, as opposed to theoretical manner. The study will present arguments supporting the value of realistic training exercises based on real world contextual elements. It will propose an educational program to resolve the discrepancy in the strategic environment and training.

Delineating the Threat

The risk of biological warfare is a serious reality and the threat to U.S. security has increased since the end of the cold war. The dissolution of the Soviet Union as a superpower ended the world of bipolar powers, destabilizing world politics.² In addition to eliminating political and economic restraint on Soviet allied states, the end of the cold war promoted hostile activities from rogue states, radical political groups, and terrorists. These fringe groups have become powerful because their activity remains unchecked by superpower influence.³

Advances in technology add to the biological weapon deployment threat.⁴ The revolution in computer technology increases the threat of biological warfare because it facilitates access to information with faceless anonymity. Terrorists or agents of rogue nation states can log on, obtain information and develop contacts with little fear of detection and subsequent retribution. Cellular phones and encryption software help terrorists commit criminal activities and evade capture.⁵ Mass media also adds to the danger of biological terrorism because the rapid dissemination of news can be manipulated to incite panic and fear.⁶

These changes in the strategic environment along with technological advances have renewed the interest in biological weapons and increased the probability of biological

warfare. Yet training does not realistically address the threat of biological weapons, methods of deployment or likely actors. Current training tends to minimize the threat because it does not place biological warfare in a historical context. Given the history and the changing contextual elements, medical systems and personnel are potential targets of biological warfare. Training preparations must be made to counter these threats.

Contending with the threat of biological warfare must become a primary competency in the military medical profession. Upgraded medical training will enable a strong proactive response rather than a panicked reaction to the strategic environment. Terrorists and/or rogue states, and technology combined with biological weapons possession is a threat that will find medical personnel on the front lines of a biological war. An analysis of historic examples highlights the seriousness of the threat by demonstrating the will to use such weapons and the damage a biological arsenal could wield.

Microorganisms in Combat Operations

Germs have always been a concern on the battlefield. The destructiveness of microorganisms is well documented. Naturally occurring diseases have historically degraded combat capability. “When troops are deployed, in peace time or war, they face invisible enemies--infectious disease--that can be as hostile as any human foe.”⁷ Microorganisms negatively impact war operations because, “Disease weakens an enemies will to resist in ways that combat cannot.”⁸

Microorganisms are nature’s weapons against warriors. Infectious disease and combat have always been connected. Microorganisms were natural enemies before people began manipulating germs.⁹ During Europe’s conquest of the New World,

depopulation by disease became a force multiplier on the side of the European invaders. “...Germs served to undermined Indian resistance by killing...and sapping the survivors’ morale.”¹⁰ Typhoid fever caused more casualties than battle during the Anglo-Boer war from 1899-1902.¹¹ In the Civil War diarrhea killed more troops than battle wounds.¹² In fact, the winners of past wars were often those most successful in transmitting the nastiest germs to their enemies.¹³

Biological warfare can halt the war effort without killing the enemy. The “timing and tempo” of war can be disrupted by non-lethal biological agents. “During the Gulf War, more than half of all troops experienced diarrhea during their first month in Saudi Arabia and more than 20% were unable to work one or more days. Had the timing of the war been different, this could have had serious operational impact.”¹⁴ An enemy could manipulate biological weapons to slow down the war effort by making troops ill.

In addition to destroying or incapacitating troops physically, germs kill the fighting spirit of combat soldiers. The inability of troops to perform duties due to illness diminishes the morale of the remaining troops. This negatively impacts the diseased Army because; “The morale of the fighting force is the single most important aspect of any battle or war.”¹⁵ Germs have the natural ability to destroy not only physically, but emotionally as well. By damaging troop morale and promoting fear and despair in survivors, germs weaken the warriors’ will to wage war.

Historical Manipulation of Microorganisms to Impact Combat Operations

Historically warriors recognized the inherent power of germs and crudely manipulated microorganisms to harm enemies before microbiology was understood.

Dumping corpses into water supplies in the hopes that what killed them would kill the enemy was a form of biological warfare practiced in biblical times.¹⁶ Biological weapons were deployed during the European conquest of America when “whites bent on wiping out ‘belligerent’ Native Americans sent them gifts of blankets previously used by small pox patients.”¹⁷ These are examples of poorly understood but effective applications of biological warfare. These “warriors” exterminated great numbers of enemies and weakened the will of survivors to fight. A modern day enemy with a rudimentary understanding of modern microbiology could have devastating effect today.

As germs were better understood and antibiotics developed, the military explored these technologies for war application. In 1942 President Roosevelt noted Japan might have been using biological weapons against China.¹⁸ The allies investigated Anthrax during World War II for use against civilian populations.¹⁹ During the Cold War the Reagan administration accused the Soviet Union of violating the Biological Weapons Convention.²⁰ History is cyclic. Once developed as a weapon, biological warfare will always be a threat.

Biological warfare may have been used as recently as Desert Storm. During this war Iraq was suspected of harboring large inventories of biological weapons.²¹ After the war it was discovered Iraq had deployed 150-200 bombs and 25 warheads filled with Anthrax, botulism, and other toxins.²² At the time 24,000 medics were positioned in the Gulf.²³ The legacy of the biological threat during the Gulf War continues. Even in 1999 biological weapons are suspected of playing a role in Gulf War Syndrome, and this has caused acrimony and distrust between the U.S. Government and Gulf War Veterans.²⁴

This historical evidence demonstrates the importance of “knowing the enemy” to prepare for and to deter war. Understanding the culture and motivation of those who would use biological agents as a weapon is imperative. Knowledge and training will minimize ethnocentric thinking and foster an understanding of the enemy who would use such weapons for psychological and physical gains. An effective response to biological warfare depends on early identification and intervention to minimize physical damage.²⁵ War is never a pretty picture, but biological weapons devastate their victims in particularly gruesome ways.²⁶ Medics must prepare to meet the threat of this gruesome type of warfare by training.

Summary

Biological weapons are a threat to national security. History has demonstrated the human capacity to use biological weapons. Naturally occurring germs possess the inherent capacity to sap morale and degrade combat effectiveness. Artificially enhanced and specifically targeted microorganisms are considerably more dangerous. Training must be improved for military medical personnel on the topic of biological warfare to rise to today’s challenge of the changing strategic environment and technological advances in the world. The lives of fielded troops and their fighting capacity will depend on the preparedness of medics in the event of biological warfare.

Notes

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² Tom Clancy and Russell Seitz, "Five Minutes Past Midnight and Welcome to the Age of Proliferation" *The National Interest* (Winter 1992-1993): 3.

³ Donald M. Drew and Dennis M. Snow, *From Lexington to Desert Storm* (Armonk, N.Y.: M.E. Sharpe inc, 1994), 295

⁴ Philip Wilcox, Jr, "Terrorism Remains a Global Issue," *USIA Electronic Journal* February 1997, 1-4; on line, Internet 28 February 1999, available from <http://www.usemb.se/journals/itgic/0297/ijge/gj-1.htm>.

⁵ Ibid.

⁶ Ibid.

⁷ Caree M. Vander Linder, "Volunteers in the Microbe War," *Soldiers* 52, no. 8 (August 1997): 42.

⁸ James A. F. Compton, *Military Chemical and Biological Agents: Chemical and Toxicological Properties* (Caldwell, N.J.: The Telford Press, 1987), 355.

⁹ Jared Diamond, *Guns, Germs and Steel, the Fates of Human Societies* (New York, N.Y.: W.W. Norton and Company, 1997), 18.

¹⁰ Ibid

¹¹ Compton, 377.

¹² Charles L. Levy and Trueman W. Sharp, "Medical Challenges for Deploying Forces," *Marine Corp Gazette*, 81, no. 2 (February 1997): 12.

¹³ Diamond, 31.

¹⁴ Levy and Sharp, 12.

¹⁵ William A. Connelly, "The Worsening Plight of the 'Army's Own'" *Army* (April 1980), 10.

¹⁶ Diamond, 357.

¹⁷ Ibid, 199.

¹⁸ Leonard A. Cole, *Clouds of Secrecy* (Totowa, New Jersey: Rowman & Littlefield, 1988), 12.

¹⁹ Compton, 360.

²⁰ Cole, viii.

²¹ General H.B. Pea III, "The Commanders View of Medical Support," *Defense Issues* 11, no. 102 (November 1996): 5.

²² John F. Sopoko, "The Changing Proliferation Threat," *Foreign Policy* (Winter 1996-1997): 3-20.

²³ Pea, 5.

²⁴ Steven C. Joseph, "Gulf Illness Remarks," *Defense Issues* 12 no.6 (11 February 1997): 6.

²⁵ Ronald M. Atlas, "Medical/Biological Nature of the Threat of Biological Weapons to U.S. Security," 27 April 1998, 5, on-line, Internet, 3 February 1999, http://www.brook.edu/fp/events/19980427_Atlas.htm.

²⁶ Jeanne McDermott, *The Killing Winds: The Menace of Biological Warfare*, (New York, N.Y.: Arbor House, 1987): 85.

Chapter 2

Contextual Elements and the Operational Art of Combat Care

The contextual and operational art elements in the strategic environment impact the provision of medical care in combat. These elements influence medical readiness and combat care. Because of this influence, treating patients with peacetime illnesses and injuries is inadequate training for the demands of war. Training revisions that encompass contextual elements will improve the military medical response to germ warfare.

Biological weapons can cause death and injury to massive numbers of combat troops or civilians in horrible ways.¹ Medical personnel become a center of gravity under a biological war scenario as they struggle to care for overwhelming casualties without becoming ill themselves. These challenges to military medicine must be addressed by placing biological warfare training in a context that reflects the realistic threat of today's strategic environment. This chapter explores contextual elements in the strategic environment upon which training could be based to improve the operational art of military medical care.

Military Operations Other Than War and Biological Warfare Training

The term Military Operations Other Than War (MOOTW) defines the employment of the U.S. military instrument of power short of war to bid our enemy to do our will. Military Operations Other Than War “focus on deterring war and promoting peace.”² These operations apply the military instrument of power across the spectrum of military operations but stop short of war.³ Enemies of the U.S. may disrupt humanitarian or peacekeeping operations by deploying biological weapons. National military and civilian leaders are aware of this threat. They have provided guidance about the danger of biological warfare in this unstable strategic environment.⁴ This guidance calls for a concerted effort to counteract the biological warfare threat in support of the national military strategy. MOOTW is a major factor in the changing strategic environment that exacerbates and complicates the threat of biological warfare.

The National Security Strategy and National Military Strategy identify MOOTW and biological warfare as serious threats. “...Our armed forces must respond to the full spectrum of crisis in order to protect our national interests.”⁵ The National Security Strategy identifies biological warfare as “particularly troubling”⁶ and says, “Although future threats are fluid and unpredictable, U.S. forces are likely to confront a variety of challenges across the spectrum of conflict, including...biological weapons.”⁷ These strategic guidelines provide a clear directive to focus on MOOTW and the biological threat. Guidance says, “In conventional operations as well as other expeditionary operations such as peace keeping missions, humanitarian assistance missions, noncombatant evacuation operations, and military assistance efforts, deployed forces are likely to face a variety of environmental and safety hazards and be exposed to multiple

infectious disease.”⁸ Medical personnel will find themselves in the center of MOOTW and biological warfare, yet if training is not improved, we will find ourselves woefully unprepared for these challenges. Biological warfare in this nontraditional combat mode is a reality that many health care providers choose to ignore. Upgraded training will force an awareness about the danger of biological warfare in MOOTW and promote learning. Training must be based on a real-world assessment of medical roles and the level of involvement for medical personnel in future contingencies. It should be discussed repetitively and in detail during readiness training.

A practiced response to the worst case scenario is the best preparation is for contingencies. Because of surrounding chaos and the unclear political situation, biological attack under MOOTW is the most difficult to manage. It is the “worse case” and most likely scenario. For these reasons, training designed to respond to this, rather than a conventional warfare threat, is best. The U.S. military will be capable of managing biological attack in a more traditional war if they can manage it in MOOTW. Medical military personnel must train for biological warfare in the context of MOOTW because they become front line warriors as victims present for treatment.

Rogue States and the Terrorist Threat

The Terrorist threat and emergence of rogue states are two issues in the which have increased the rate of U.S. participation in MOOTW and exacerbated the risk of biological weapons deployment. These contextual elements have increased the demand for readiness training for military medical personnel. “Approximately 17 countries may have active research and development programs for biologic weapons.”⁹ However, nation states are not the only or most threatening actors in the biological warfare game.

Actors in weapons proliferation have expanded to include outlaw states, politically disaffected groups, and terrorists.¹⁰ The motivation for possession of biological weapons has shifted from deterrence by nation states to use by terrorists.¹¹ This dramatically increases the threat of deployment. Other security risks expanding the actors' capabilities in biological warfare include the availability of biological weapons, the communications revolution, and the ease with which these weapons can be manufactured and deployed. Security is further threatened by the fear that "bad actors" possess and will use these weapons because responsibility is deniable.¹²

In order to develop comprehensive and realistic training one must understand why the enemy pursues such weapons. Biological weapons are most suited to sabotage, terrorism and covert operation."¹³ They appeal to rogue states and terrorist for at least two pragmatic reasons: The manufacturing apparatus is easy to conceal as a legitimate industry¹⁴ and they are relatively inexpensive to manufacture.¹⁵ K. Peters says: "For the price one gets a brutally versatile weapon."¹⁶ Tom Clancy, in an article entitled *Five Minutes Past Midnight and Welcome to the Age of Proliferation* states: "Biological weapons have become the lazy man's weapon."¹⁷ Other authors build on this notion of easy access to biological weapons. Anyone can develop mass destructive capabilities via Internet, catalogue or their local library¹⁸ and culture the bacteria at home."¹⁹ Dual use technology makes it easy for terrorists to acquire and deploy these weapons of mass destruction undetected. These actors will have little to lose and much power to gain by deploying biological weapons. Deterrence mechanisms used in the Cold War will not phase these enemies because their motives are to promote or preserve fringe group interests, not nation state stability.

In response to the new strategic environment, medical military personnel need to prepare by creating training scenarios within a MOOTW model that encompasses attack from rogue nations and terrorist enemies. Recent history demonstrated that fielded medics in Desert Storm were ill prepared to be suspect of the biological weapons threat. Military medics are still not specifically trained to prepare for stealthy biological attack during biological warfare training.

Threat of Biological Weapons and the Military Obligation to American Civilians

The terrorist threat in the United States presents additional training issues for the military medic. The notion of a biological weapons attack on U.S. citizens at home complicates the battle. Training must address these issues. Because terrorists use fear to exploit the strategic environment to their advantage,²⁰ federal employees and U.S. citizens have become targets. Terrorist will attempt to engage the U.S. during military operations other than war by exploiting the fear in the civilian population.²¹ Biological weapons will be the weapons of choice for many terrorists engaged in this activity.²² Troops stationed in the continental United States are no longer safe from the terrorist threat. Domestic biological terrorism is a serious security problem for the United States.

Training must involve stateside non-government organizations, as well as local volunteer relief agencies to develop a coordinated response plan to the terrorist threat at home.²³ Interoperability with federal agencies, including the military and Center for Disease Control, must be rehearsed. If the risk of infection from biological weapons is not recognized early, health care workers will become victims.²⁴ Civilian leaders will be counting on us to help.²⁵ We need to prepare through training.

The civilian public has become increasingly aware of the issue of biological warfare because it has been addressed in the common press. A Readers Digest article asks if we are “Ready for Bioterror?”²⁶ An Associated Press newspaper article discusses a hoax anthrax attack on a U.S. abortion clinic.²⁷ Even the 700 Club web site addressed the threat to Americans from biological warfare and terrorism.²⁸ The American public expects the military to provide aid and guidance to civilian authorities should a state side attack occur. Once again, training is the answer to the call from the civilian community.

Locally based civilian authorities believe the military has the expertise to take the lead should biological weapons be deployed in the U.S. They expect military medical leaders to supply guidance for training as well as response to any “911” calls because of biological weapons deployments.²⁹ Elected civilian leaders expect the military to be prepared for biological attack at home as well as overseas. Congress has mandated a program for federal aide to cities to develop civil response to biological warfare.³⁰ This training must involve military medical personnel who care for patients and who will most likely interface with civil authorities in a disaster. The military will benefit from conducting this training by being better prepared for biological attack during MOOTW, at home or abroad. However, to provide the training and response expected, the U.S. military must assure the training is in compliance with the standards of performance the public expects.

Biological War and Mass Casualty

There are no auditory alarms for biological weapons. The first alarm is physical symptoms and then it is too late for preventive measures because the attack is over.³¹ The nature of biological warfare is to create a mass casualty situation which overwhelm

the medical infrastructure with dead or dying personnel.³² Training must take the mass casualty scenario into account.

To medical personnel, a mass casualty situation is one of the most terrifying and stressful duty situations one will ever face. Overwhelming numbers of ill or injured patients stretch every technical and emotional coping skill to the maximum. Dianna Meehan, an Army chaplain, speaks from experience when she observes: “Mass casualty situations can extract an emotional toll from the care giver, a toll that can be debilitating.”³³ Practice through military exercises and training is a time proven method to improve skill and minimize the emotional impact of mass casualty situations.³⁴ Those who deploy biological weapons understand the mass casualty effect of biological weapons and will exploit the helplessness and fear of medical personnel to destroy order and disrupt combat capability in any way possible.

Emotional stress is a detriment to combat capability because it impacts morale, physical health, and the ability to function effectively.³⁵ Symptoms of stress include, “Insomnia, nightmares, memory loss, nausea, uncontrollable shaking and migraine headaches.”³⁶ Someone with such symptoms cannot function properly, especially in a combat or mass causality situation and is causality just as sure as he was shot.³⁷ Those deploying biological weapons will be counting on these effects to conquer the center of gravity. Training is the most effective method to counteract these effects.

Rapid and capable treatment of casualties can boost morale and become a force multiplier for combat troops.³⁸ If medical personnel are incapacitated from biological weapons, other combat injured troops will not receive prompt treatment. Treating battlefield injuries is a vital mission for military medics. “The evacuation and treatment

of casualties on the battlefield is one of the most frustrating and difficult missions...It is also one of the most important for troop morale.”³⁹ Medical personnel must be prepared to deal with the medical mass causality situation of biological warfare. Historically, units effectively prepare for mass casualties with realistic simulated exercise training.⁴⁰

` The survivability and function of military medical personnel is imperative to maintain morale and fighting capacity.⁴¹ Once again, improved training is key to response, but here the emphasis is on realistic training exercises. This type of training will improve performance and provide a frame of reference for medics treating patients in a mass causality and/or battlefield setting.

The Manipulation of Biological Weapons to Incite fear, and the Human Response

Biological weapons evoke apocalyptic fear.⁴² If biological weapons are deployed, the emotional component will cause major friction in the war. Actors deploying biological weapons will use the paralysis of this fear to their advantage. “Many toxins could be used in weapons to produce militarily significant/terrorist (psychological) effects--especially in poorly educated troops or uninformed civilian populations.”⁴³ Training will enable constructive channeling of apocalyptic fear of biological warfare.

Fear, a basic survival emotion, is the most common emotional response to biological warfare on a national and individual level.⁴⁴ The emotion of fear is a human response to events or thoughts perceived by the person as harmful.⁴⁵ It is a basic emotion that aided primitive survival by stimulating a fight or flight response to danger. For primitive man this response was lifesaving. However, in a technologically modern and complex world, responding on an emotional level to a predictable threat is ineffective.

Training must address the fear issue because during the Gulf war the threat of biologic weapons proved to be a powerful psychological weapon which distracted the fielded troops from the war fighting effort.⁴⁶ Weapons of mass destruction are by nature instruments of intimidation intended to influence the enemy via fear to do our will.⁴⁷

Realistic training, similar to special operation forces “full dress rehearsals” facilitates logical thinking and planning in response to complex conditions.⁴⁸ “Knowledge helps you overcome the fear of the unknown. Knowing your stuff helps give you the confidence you need to meet the enemy in battle.”⁴⁹ Training provides practice to instill rational behavior under threatening conditions. “Training then--good and bad--is habit forming. The difference is that one develops the battlefield habits that win; the other gets you killed.”⁵⁰ A well-rehearsed response plan will enable individuals to explore their emotional responses to biological warfare and will help develop the emotional fortitude to respond to a biological attack on a rational level.⁵¹ This will improve the survivability of all the victims of such an attack.

As Franz observed, “We typically fear what we do not understand.”⁵² The best defense against biological weapons is a training program that takes into account emotional factors, especially the fear, of biological weapons. The untrained individual experiencing a fight or flight response when donning chemical warfare gear, caring for victims of biological weapons, or just dealing with the fear that biological weapons provoke, will not possess the composure to function effectively.

Training to the fight or flight response will help to minimize chaos, or the fog of biological warfare.⁵³ Troops can then funnel that energy into organized and cohesive action (economy of force) to minimize the negative effects of the attack. So the question

is how to train troops to minimize negative effects of fear, and use them instead to motivate troops toward productive action.

Why Training is the Answer

The threat of biological warfare can be addressed through other means besides training.⁵⁴ One method is deterrence. However, deterrence has great potential to fail with biological weapons because terrorists and rogue nations are not persuaded by traditional political deterrence measures. Retaliation is a useful deterrent only if responsibility can be assigned.⁵⁵ Dual purpose technology makes surveillance and detection difficult. Finally, the ease and stealth with which these weapons can be manufactured means those with few morals, little to lose, and not much intelligence can manufacture and deploy biological weapons despite the United States' super power status.

Some war fighters might suggest resources would be better spent in defense against biological weapons rather than on training. However, "There is no credible defense against biological attack."⁵⁶ Defense is especially difficult with the home threat of biological weapons. Civilians do not even own gas masks.⁵⁷ Other weapons of mass destruction lose potency over time, but biological weapons accelerate disaster in a logarithmic progression if infection control measures are not applied early. A biological attack would become a war of attrition as medical personnel struggle to treat casualties with degraded human resources. Investing in well-trained troops is the best protection.

Another reason to apply training to this problem is that there is no such thing as a harmless biological weapon. Someone will always be at risk.⁵⁸ Therefore, it is imperative that medical personnel receive training designed to suspect, detect, and respond early to

the threat of biological warfare. Medical personnel must be prepared to act quickly under any condition, including a terrorist threat in normal clinical practice in the U.S. or abroad, in MOOTW, or in a conventional conflict.

Treaties are another method of countering the threat of biological weapons. However, treaties are unreliable deterrence mechanisms for biological warfare. The 1972 Biological Weapons Convention succeeded in getting nations to sign a ban on biological weapons,⁵⁹ but because of dual purpose technology it is not verifiable.⁶⁰ Also, some nations who signed are suspected of continuing to produce biological weapons. The fact that the threat of biological weapons is greater today than in 1972 is a good indication that treaties are ineffective deterrents to biological weapons.⁶¹ Also, treaties do not take into account non-nation-state actors who do not have the opportunity or inclination to sign a biological weapons ban, but possess the means to manufacture biological weapons. Even if all actors signed a ban on biological weapons in good faith a solid training program by military medics is the best insurance that the nation will survive a biological attack.

Epidemiological tracking is an important component of countering the threat of biological warfare. This is a function of military medics, and programs have been initiated since the emergence of Gulf War Syndrome.⁶² This type of tracking is effective in identifying that an attack has occurred once troops are symptomatic, but will do little to prevent disaster should a lethal attack occur.

Early detection is important because the most effective generic countermeasure to biological attack is the protective mask. In order for a protective mask to be effective, personnel must be warned of an attack before infection occurs.⁶³ Detecting the

deployment of biological weapons is a vital medical group function, but is useless if personnel are untrained to respond in a productive manner. Early detection is an important component in the defense against biological warfare and augments training, but it is useless if medical personnel panic out of ignorance. “Knowledge helps you overcome the fear of the unknown. Knowing your stuff helps give you the confidence you need to meet the enemy in battle.”⁶⁴ Training is also helpful on a psychological basis because it places control at the individual level. Troops have to depend on the bureaucracy for warning, treaties and immunizations. But training gives each medic an opportunity to be a proactive team player in biological warfare. If we must place our troops in these dangerous situations, we are obligated to give them the tools through training to deal with these contingencies. Current training does not do this.

Vaccinations are another medical group responsibility that will help counter the threat of biological weapons deployment. Vaccination is the most effective means of preventing casualties.⁶⁵ However, each toxin must be considered individually.⁶⁶ To be effective, immunization requires knowledge of the threat, availability of the vaccine, and time for the body to manufacture the antibodies.⁶⁷ Even the most effective immunization program does not negate the need for a strong training program. Troops need to receive quality training to counter the biological weapons threat, because there are too many uncertainties with the other programs.⁶⁸

In summary, deterrence, defense, vaccination programs, treaties, and epidemiological tracking are a part of the anti-biological warfare arsenal, but training remains a major means to effectively counteract biological warfare. Recent history demonstrated that fielded medics were ill prepared in tracking, and responding to the treat

of biological weapons from rogue states. In additions, medics must be sensitized to a threatening strategic environment where biological weapons may be stealthily deployed by almost anyone. Even though intelligence operators will study the threat, medical personnel will be the first to encounter the epidemic. This places them in a prime position to identify an infectious disease as possible biological warfare. The intelligence community may verify the threat, and notify others who are endangered, but it is important for medics to become suspicious early in order to stop the spread of disease. The failure of the medical community to meet the needs of the fielded forces during Desert Storm continues to haunt the military community. This must be corrected by improving training to more adequately deal with future conflicts.

One may ask, with so many threats to U.S. security, why focus specifically on biological weapons deployment? One obvious reason is that it falls into the technical expertise of military medical personnel. A more important reason is the severity of the threat. While serving as undersecretary of defense Fred Ikle singled out microbiology as one of the sciences and technologies that “poses the greatest risk to U.S. security.”⁶⁹ He said: “Pound for pound, penny for penny, biological weapons excel in packing the deadliest punch of any weapon.”⁷⁰ These issues dictate the need for the U.S. medical service to formulate a solid training plan in response to this threat. The survival and aggressive medical response of medical personnel will provide the most effective national security against biological weapons. In the event of biological attack, survival and response will depend on training.

Notes

¹ Ronald M. Atlas, "Medical/Biological Nature of the Threat of Biological Weapons to U.S. Security," 27 April 1998, 5, on-line, Internet, 3 February 1999, http://www.brook.edu/fp/events/19980427_Atlas.htm.

² Joint Publication 3-07, *Joint Doctrine for Military Operations Other Than War*, 16 June 1995, I-1.

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Chapter 3

Training Proposal and Conclusions

History provides ample evidence to support the expectation that a future enemy of the United States will deploy biologic weapons. The strategic environment indicates biological weapons may be deployed sooner rather than later. Recent history in the Gulf War demonstrated that military medics were inadequately prepared to protect American troops from biological weapons real, threatened, or imagined. Out of all the measures that can be applied to correct this problem, training is the most important. Our leaders validate this in Vision 2010. This document states, “Realistic and successful training has been the primary way to keep readiness high and prepare our men and women to face the challenges of combat.”¹ It also says “...training is and must remain our best combat multiplier.”² To strengthen medical service, training needs to be realist and ensure the contextual elements are presented as they pertain to the threat of the threat of biological warfare.

This paper has presented arguments that support the thesis that, “Current military training of medical personnel in biological warfare is deficient because it fails to address changing contextual elements.” Today’s training is still wrongly rooted in the contextual context of an anticipated global war in a bipolar world. This out-dated thinking impedes

efforts to provide the training required for medical personnel to perform under MOOTW, the most likely scenario under which biological weapons might be deployed.

Integrating the Domains of Learning into Training

Current training focuses on donning Mission Oriented Protective Posturing (MOPP) gear, and testing for residual agents such as nerve or blister causing chemicals. This is a start, but it only involves a few psychomotor skills and does not bring the affective and cognitive domains of learning into a situation that is complex. A more sophisticated and comprehensive teaching plan is required. The disruption in systems under biological attack needs to be emphasized. An opportunity to practice the psychomotor skills in the context of the cognitive and affective elements is important to reinforce learning and enhance job performance.

Applying Malcom Knowles theory of learning³ to the review of the literature on biological warfare indicates that *effective preparation for biological warfare must occur under a MOOTW situational context with medical mass causality training*. One simple example of how training is lacking is practicing patient care while wearing the MOPP equipment. Wearing the gear necessary for biological defense is currently practiced as a simple psychomotor skill. However, wearing MOPP gear mask and performing a job requires the application of more complex cognitive and affective components. One expert predicts, “There’ll be two psychological casualties for every medical or heat exhaustion-dehydration casualty.”⁴ It is important for medical staff to learn from experience how take care of themselves so they don’t become casualties. Medics must overcome any fear or claustrophobic feelings while wearing MOPP gear before biological weapons are deployed.

Functioning in a contaminated environment adds to the friction of war. Wearing MOPP gear consumes much energy and panic can make productive work impossible in the fog and friction of war. Biological warfare creates a logistics nightmare because you must have two of everything: One clean and one dirty. Every task takes twice as long in MOPP gear.⁵ Training using exercise scenarios will minimize the friction of war caused by working in a contaminated environment. Civilian abortion clinics have demonstrated the value of training scenarios after receiving hoax anthrax scares. Terrorist inadvertently provided opportunity for this real-world training by sending letters in the mail, which claimed to be contaminated with anthrax. To avoid unnecessarily having to decontaminate personnel and equipment due to a probable hoax, office workers have begun opening mail wearing surgical gloves and masks.⁶

These examples demonstrate how changes in the strategic environment have altered contextual elements under which biological weapons will be deployed. A historical overview of the use of biological agents throughout war history would help understand the warrior mind in relation to these elements. The changes in the strategic environment will change the conditions and methods under which biological agents will be deployed. The notion of stealth deployment by terrorists or a rogue nation state must be presented. This information will assist promote respect for the seriousness of the situation and provide a basis to begin working in the affective domain to overcome the fear of biological weapons.

The time to learn is before the information is needed. Studies show learning capacity is degraded under stress. In experiments with rats fear inhibited learning and prevented them from remembering information.⁷ A training exercise such as a Mass Accident

Response Exercise (MARE) to practice caring for hoards of infected patients wearing MOPP gear is an excellent military example of a scenario providing practice for psychomotor skill, applying cognitive learning, and confronting issues in the affective domain of learning.

The MARE could encompass a scenario where a rogue nation or terrorist with biological weapons deploys them by stealthy methods. This would help sensitize medics to the biological warfare threat. It would teach them to rule out the possibility that infectious disease they treat could be due to biological weapons deployment. Developing this subjective response to environmental conditions is a skill that falls in the affective domain of learning. This suspicion fostered by knowledge of history and changes in the strategic environment would help personnel develop proficiency in the decision making chain for when to don MOPP gear, and when to sound the alarm for others to do the same. The biological warfare component could be integrated into the Wing exercise, promoting integrated training without adding extra base training days.

Biological warfare will place medical personnel on the front lines of the war. The investment in training needs to be as vigorous for medic warriors as for other combat troops. Realistic training must be provided to medical personnel for their protection and to assure defense against biological weapons deployment. Although costly and time consuming, this training is an investment America cannot afford to neglect. Training exercises will provide the situational awareness required for the military medic to win the germ war. Given the potential for the seriousness of biological threats, having service members fully informed is critical to protecting them.⁸ “Medical readiness to fight...includes our service maintaining superb training programs.”⁹

Conclusion

This paper has covered a broad array of information in an attempt to pull together divergent areas of study to address the problem of training military medical personnel on the art of countering biological warfare. To demonstrate the destructiveness of the threat the natural history of disease was reviewed. The sinister side of mankind was demonstrated with the historical use of biological weapons. Biological weapons have been used before, they will be used again. Military medics must prepare for this by training.

A large portion of the text was devoted to describing the strategic environment. This demonstrated how the changing contextual elements under which biological weapons will be deployed serve as trigger events for changing training. Strategic issues impacting medical training for biological warfare include the deployment of troops into MOOTW, the threat from rogue nations and terrorism, the threat to civilians in United States, mass causality situations, and the human fear response to biological weapons. These are contextual campaign planning elements that must be addressed in training. Only then will the U.S. military have an effective plan against biological weapons deployment.

After addressing the contextual elements, the best method of training for the multi-complex skilled response to this threat was proposed. Malcom Knowles theory of adult learning serves as a theoretical basis for the notion that exercises depicting life-like scenarios provide the most effective training. Realistic exercises address the contextual

elements and provide an opportunity to work through fear. Through training, the operational art of military medicine to counteract biological weapons deployment can be honed to a level that will foster a strong military defense. Given time, it and may even deter deployment of biological weapons because the reputation of excellent medical readiness will communicate that biological warfare will not achieve the enemies objective. We will be ready to fight and win the battle.

The Future of Training

With the implementation of TriCare, in Military Treatment Facilities, the pressures for Medical Group Commanders to provide access to care and patient satisfaction are tremendous. Medical Groups are unique because the peacetime mission competes for the same resources required for wartime readiness. Training must reconcile this competition by design so all the missions can be met.

Medical Treatment Facility (MTF) Commanders must be resourceful and creative in finding the means to accomplish both missions. Impact on patient care can be minimized with adequate publicity and creative scheduling. Beneficiaries might be invited to volunteer as exercise “patients” to better understand the training activities. Wing Commanders must support training at the MTF. Medic participation in base-wide exercises will improve interoperability base wide, without additional stress on resources. Training must be balanced with the needs of our patient population as Military Treatment Facilities struggle to provide care under the guidance of managed care.

Training on biological warfare is a vital issue. The entire military community must support it, not only with words in the National Security Strategy and National Military Strategies, but with resources and funding. Leaders in the MTFs have an

obligation to maximize training time and assure biological warfare is presented with the time available. National leaders can help by assuring MTF leaders are encouraged to push to improve biological warfare training. Finally, the MTF customers must be informed about training and invited into the process so they can be informed consumers.

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